

Measurement System Performance Specifications

This document establishes a procedure for performance specifications of measurement systems used in emission testing. This procedure will comply with State and Federal regulations.

The Engineering Group has primary responsibility for oversight of the emission-testing program. This memorandum describes calibration procedures to be followed when conducting emission tests.

All of the following should be measured and calculated:

- Analyzer Calibration Error: Calculated from the difference between the response of the analyzer and the actual gas concentration in the cylinder. Prior to and following each run.
- Sampling System Bias: Calculated from the difference between the system calibration response and the analyzer calibration response. Prior to and following each run.
- Zero Drift: Calculated from the difference between the final calibration response and the initial calibration response at a zero concentration level. This should be calculated for the analyzer as well as the system. To be performed subsequent to each run.
- Calibration Drift: The same as zero drift, except at an upscale gas concentration. To be performed subsequent to each run.

Analyzer calibration should be performed at the zero, mid and high range levels. System calibration should be performed for the zero and an upscale level. The performance specifications will be as follows:

- Analyzer Calibration Error: Less than $\pm 2\%$ of the span of the zero, mid and high range calibration gas.
- Sampling System Bias: Less than $\pm 5\%$ of the span of the zero, mid or high range calibration gas.
- Zero Drift: Less than $\pm 3\%$ of the span over the period of each run.
- Calibration Drift: Less than $\pm 3\%$ of the span over the period of each run.

The definitions can be found in EPA 40 CFR Part 60: Method 6C. Also, the following format, similar to that in Method 6C, should be used in the test report:

EPA METHOD __ (Constituent) Calibration Worksheet	
Company:	Run Number:
Source ID:	Analyzer Range:
Test Date:	Analyst:

ANALYZER CALIBRATION DATA

		Initial Values				Final Values		
Gas Concentration	Cylinder Value	Analyzer Calibration Response		Difference	Calibration Error	Analyzer Calibration Response		Drift
	(units)	Volts	(units)	(units)	%	Volts	(units)	%
Zero								
Mid								
High								

SYSTEM CALIBRATION BIAS AND DRIFT DATA

		Initial Values		Final Values		
Gas Concentration	Analyzer Calibration Response	System Calibration Response	System Calibration Bias	System Calibration Response	System Calibration Bias	Bias Drift
	(Units)	(Units)	%	(Units)	%	%
Zero						
Upscale						

This procedure should be followed for all emission test reports. Prior approval from the Engineering Section should be obtained for any modification. This information will be available on our web page.

For more information, contact Engineering Support at (225) 219-3428.